

MCF 3M
Test Review Ch 4

Opener

Solve for the zeros of the following functions

$$\begin{aligned} \text{i) } f(x) &= -x^2 + 3x + 10 \\ f(x) &= -(x^2 - 3x - 10) \rightarrow \begin{array}{r} A \mid M \\ -10 \\ \hline -5 \quad +2 \end{array} \\ f(x) &= -(x+2)(x-5) \\ \text{ii) } f(x) &= 2x^2 - 7x - 18 \end{aligned}$$

Mar 29-8:18 AM

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Test Review Ch 3 & 4

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$$\begin{aligned} \text{i) } f(x) &= -x^2 + 3x + 10 \\ f(x) &= -(x^2 - 3x - 10) \rightarrow \begin{array}{r} A \mid M \\ -10 \\ \hline -5 \quad +2 \end{array} \\ f(x) &= -(x+2)(x-5) \\ \text{ii) } f(x) &= 2x^2 - 7x - 18 \\ &= 2x^2 + 3x - 12x - 18 \\ &= x(2x+3) - 6(2x+3) \\ &= (2x+3)(x-6) \\ &\quad -3 \quad +6 \end{aligned}$$

Mar 29-8:18 AM

State the number of zeros in the following functions

$$\begin{aligned} \text{i) } f(x) &= -2(x+3)^2 - 6 \\ \text{ii) } f(x) &= (x+3)(x-3) \\ \text{iii) } f(x) &= 25x^2 + 40x + 16 \end{aligned}$$

Mar 29-8:25 AM

State the number of zeros in the following functions

$$\begin{aligned} \text{i) } f(x) &= -2(x+3)^2 - 6 \quad \begin{array}{l} \text{0 zeros} \\ \text{b/c vertex} \\ \text{below x axis} \\ \text{and points} \\ \text{down} \end{array} \\ \text{ii) } f(x) &= (x+3)(x-3) = 2 \text{ zeros} \\ \text{iii) } f(x) &= 25x^2 + 40x + 16 = 1 \text{ zero} \\ &\quad (5x+4)^2 \quad \text{perfect square} \end{aligned}$$

Mar 29-8:25 AM

When does a rocket modelled by the function $f(x) = -2x^2 + 10x - 6$ reach its maximum height? When does it reach 3m?

p.226 q.7-11
p.254 q.5-10
p.256 q.4-6, 8,10

Mar 29-8:27 AM

Tools Quadratics

Roots \rightarrow Sub into Standard form

- 1) Decomposition A/M
- 2) Quad Formula

Zeros \rightarrow 1) Decomposition
2) $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ if non-factorable

$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $f(h,k)$
Vertex

- 1) $\frac{s+t}{2} = X_{\text{Vertex}}$
- 2) Complete the Square

Oct 19-9:57 AM

When does a rocket modeled by the function $f(x) = -2x^2 + 10x - 6$ reach its maximum height? When does it reach 3m?

$$f(x) = -2x^2 + 10x - 6$$

$$f(x) = -2(x^2 - 5x) - 6$$

$$f(x) = -2(x^2 - 5x + \frac{25}{4}) - 6$$

$$f(x) = -2(x - \frac{5}{2})^2 - 6 + \frac{25}{2}$$

$$f(x) = -2(x - \frac{5}{2})^2 + \frac{50}{2} - 6$$

$$f(x) = -2(x - \frac{5}{2})^2 + \frac{50}{2} - \frac{12}{2}$$

$$f(x) = -2(x - \frac{5}{2})^2 + \frac{38}{2}$$

$$f(x) = -2(x - \frac{5}{2})^2 + 19$$

The rocket reaches a maximum height of 19m at 2.5 sec.

ii) $0 = -2x^2 + 10x - 6$

$$y = 3$$

$$3 = -2x^2 + 10x - 6$$

$$0 = -2x^2 + 10x - 9$$

$$0 = -2x^2 + 10x - 9$$

Next Step?

$$0 = 2x^2 - 10x + 9$$

$$a = 2$$

$$b = -10$$

$$c = 9$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{10 \pm \sqrt{100 - 72}}{4}$$

$$x = \frac{10 \pm \sqrt{28}}{4}$$

$$x = \frac{10 \pm 2\sqrt{7}}{4}$$

$$x = \frac{5 \pm \sqrt{7}}{2}$$

The rocket reaches a height of 3m at 1.2 sec and 3.8 sec.

When Finished: Complete p. 1-8 p. 155

Mar 29-8:27 AM

$$f(x) = 2x^2 + 3x + 1$$

$$f(x) = 2(x^2 + \frac{3}{2}x) + 1$$

$$f(x) = 2(x^2 + \frac{3}{2}x + \frac{9}{16} - \frac{9}{16}) + 1$$

$$f(x) = 2(x + \frac{3}{4})^2 - \frac{9}{8} + 1$$

$$f(x) = 2(x + \frac{3}{4})^2 - \frac{18}{16} + \frac{16}{16}$$

$$f(x) = 2(x + \frac{3}{4})^2 - \frac{2}{16}$$

$$f(x) = 2(x + \frac{3}{4})^2 - \frac{1}{8}$$

$(-\frac{3}{4}, -\frac{1}{8})$

Mar 29-10:48 AM

Complete the Square

$$f(x) = \frac{1}{2}x^2 + 5x - 3$$

$$f(x) = \frac{1}{2}(x^2 + 10x) - 3$$

$$f(x) = \frac{1}{2}(x^2 + 10x + 25 - 25) - 3$$

$$f(x) = \frac{1}{2}(x + 5)^2 - \frac{25}{2} - 3$$

$$f(x) = \frac{1}{2}(x + 5)^2 - \frac{25}{2} - \frac{6}{2}$$

$$f(x) = \frac{1}{2}(x + 5)^2 - \frac{31}{2}$$

Mar 29-10:53 AM

$$C(t) = 0.2t^2 - 10t + 650$$

$$0.2(t^2 - 50t) + 650$$

$$0.2(t^2 - 50t + 625 - 625) + 650$$

$$0.2(t - 25)^2 - 125 + 650$$

$$0.2(t - 25)^2 + 525$$

$$f(x) = a(x - h)^2 + k$$

$$(25, 525)$$

At 25 cars the cost to make each car is minimized to \$525.

Nov 1-7:33 AM



Oct 20-7:34 AM